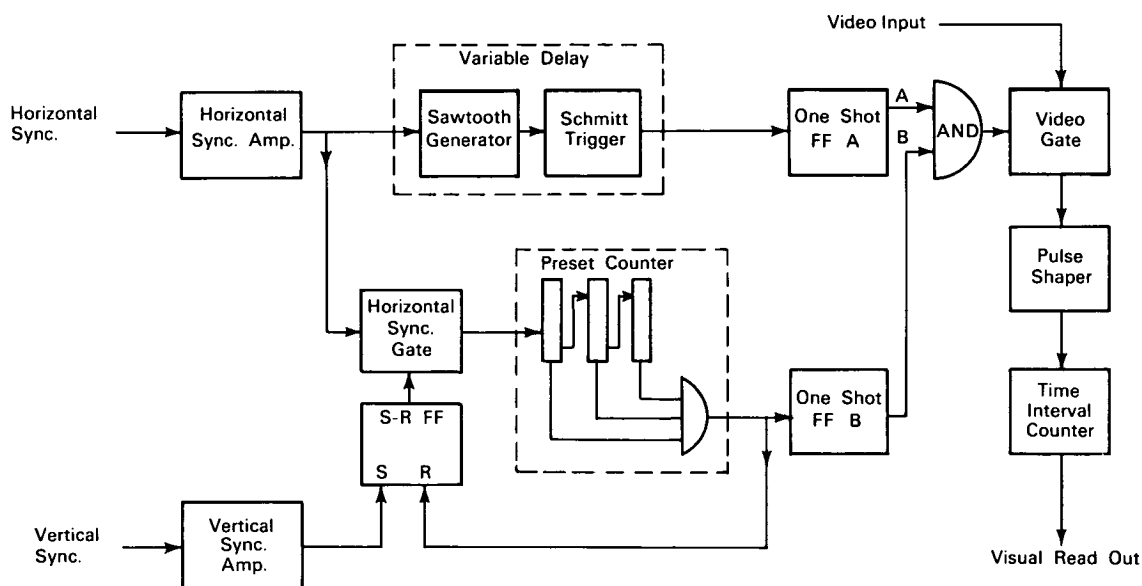


# NASA TECH BRIEF



This NASA Tech Brief is issued by the Technology Utilization Division to acquaint industry with the technical content of an innovation derived from the space program.

## Raster Linearity of Video Cameras Calibrated with Precision Tester



**The problem:** In certain vidicon television camera tubes designed for taking high-resolution pictures in space, the maximum permissible raster linearity error is  $\pm 0.5\%$ . Calibration of the raster linearity to this degree cannot be accomplished with conventional instrumentation.

**The solution:** A method was devised that measures the time between transitions in the camera video output as registered at reticle marks on the vidicon faceplate.

**How it's done:** A flat white field is used as the input image to the vidicon being calibrated. For horizontal linearity measurement, a portion of a preselected line of video is gated to a time-interval counter. As the vidicon beam passes the vertical reticle line, a pulse appears in the video rising toward black. As the

beam traverses the second reticle line, a similar pulse is generated. The time-interval counter measures the time interval between this pair of pulses. The reticle geometry is oriented parallel to the direction of sweep. For vertical linearity measurement, a much shorter portion of a number of horizontal raster lines is selected. Ideally, a black pulse is generated for only those lines of video that traverse the horizontal portion of the desired pair of reticles and only during the sample period. Input A is generated by the one shot flip-flop A, set to provide the proper gate pulse time (approximately equal to one fourth of a TV line time). The trigger is derived from delayed horizontal sync. Input B is generated by the one shot flip-flop B, set to provide the proper gate pulse time (equal to one horizontal line time). The trigger is supplied by the preset counter output.

(continued overleaf)

**Notes:**

1. The tester can be used in conjunction with a camera and oscilloscope in making calibration measurements of gray-scale response, resolution response, and shading.
2. The tester has been successfully used in routine calibration and testing of the advanced vidicon camera system (AVCS) of the Nimbus satellite.

3. Inquiries concerning this innovation may be directed to:

Technology Utilization Officer  
Goddard Space Flight Center  
Greenbelt, Maryland, 20771  
Reference: B64-10209

**Patent status:** NASA encourages commercial use of this innovation. No patent action is contemplated.

Source: Radio Corporation of America  
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Space Flight Center  
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